THE "GPRA" CHALLENGE

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ABSTRACT

This paper provides a brief overview of considerations leading to enactment of the Government Performance and Results Act (GPRA), key features of the Act, a process undertaken by the National Science and Technology Council and the Office of Science and Technology Policy to consider principles for assessment of fundamental science, how the National Science Foundation is responding to GPRA, and the planning and assessment efforts to date by a statistical unit within the Foundation.

KEYWORDS

Program Evaluation, Program Assessment, Outcomes, Outputs, Impacts, Government Performance and Results Act

1. BACKGROUND

The Washington Post recently ran a series of articles beginning with the headline "Americans Losing Trust in Each Other and Institutions" (Morin and Balz 1996) and following a study, "Why Don't Americans Trust the Government?" (*The Washington Post*/Kaiser Family Foundation/Harvard University Survey Project, 1996).

Lofty public aspirations for the operation of American institutions and substantial public dissatisfaction with their performance has prompted organizations in both the public and private sectors to seek improved management of operations, increased accountability of executives and staff, and better communication with sponsors and stakeholders.

The Federal government is no exception. In 1993, Congress passed the Government Performance and Results Act (GPRA) with bipartisan support. President Clinton signed the bill into law, and it has become a significant component of the Administration's overall National Performance Review which seeks a government that works better and costs less. At the other end of Pennsylvania Avenue, Congress is keeping a close eye on the National Performance Review and implementation of GPRA (see, for example, U.S. General Accounting Office May 2 and June 20 and 27, 1995).

2. GOVERNMENT PERFORMANCE AND RESULTS ACT

The goals of GPRA are ambitious and include (1) improved planning and management of Federal programs, (2) increased accountability of Federal agencies and assessment of the results of their

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programs, (3) improved communication with Congress and the public, (4) better information for Congressional and agency decision making, and (5) increased public confidence in the Federal government.

To accomplish these goals, GPRA sets out a comprehensive system for effective planning and management to be applied in every Federal agency. The system is built on three main elements--multi-year **strategic plans**, annual **performance plans**, and annual **performance reports**.

2.1 Strategic Plans

Each agency must prepare a strategic plan that covers a period of five or more years and is revised at least once every three years. The plan should be prepared in consultation with Congress, the Office of Management and Budget (OMB),[2] and stakeholders. It should include descriptions of (1) the agency fundamental mission (or missions), (2) the long-term general goals and objectives for implementing the mission(s)--expressed in a manner that allows a future assessment of success or failure, (3) how the goals and objectives are to be achieved (including operational processes, skills, technology, and resources required to meet the goals), (4) how the goals and objectives in the strategic plan will be related to the performance goals in the annual performance plans, (5) key factors outside the agency and beyond its control that could have a significant effect on achievement of the goals, and (6) how the results of retrospective program evaluation were used to establish or revise the general goals and objectives, along with a schedule for future evaluations.

2.2 Annual Performance Plans

Each agency must prepare a performance plan every year. The annual performance plan links agency operations to the long-term general goals stated in its strategic plan. The annual performance plan should include (1) annual performance goals for agency programs, (2) a summary of resources necessary to reach those goals, (3) the performance indicators that will be used to assess performance in the future, and (4) identification of how the measured values for assessing performance will be verified.

In general, performance goals should be stated in measurable form. However, the framers of GPRA recognized that, in rare instances, it may not be feasible to measure the results of a Federal program quantitatively. A program of basic research is cited as such an example (U.S. Senate 1993, page 5). If an agency, in consultation with the Director of OMB, determines that it is not feasible to express performance goals for a particular program in an objective, quantifiable, measurable form, the Director of OMB may authorize an alternative approach. Nevertheless, even when the alternative form is used, there must still be a clear statement of a program's goals and clear standards for identifying whether the program is successful or not.

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[2]The law does not specifically require an agency to consult with OMB in the preparation of its strategic plan. However, since the agency must obtain OMB approval for the performance goals stated in its performance plan and since these must be consistent with the strategic plan, it is appropriate to consult with OMB in the preparation of the strategic plan as well. OMB guidance requires early and frequent consultation with OMB staff.

2.3 Annual Performance Reports

Each agency must prepare an annual performance report that addresses the goals of the previous performance plan and tells what was actually accomplished for the resources that the agency expended. The performance report should provide explanatory information about goals not met; for example, plans for achieving the goals in the future or reasons why the goals cannot be met. The report should present a clear picture of the agency's performance and its efforts at improvement. Since OMB and Congress do not want to be buried in a blizzard of paper work, the report should convey its message in clear concise form.

2.4 What is the Reporting Unit?

Strategic plans, performance plans, and performance reports are submitted by each agency to the Office of Management and Budget (OMB). All agency programs should be covered in the performance plans and reports. Under GPRA, a program is an activity or project listed in the Federal budget; however, GPRA gives agencies the option to aggregate or dis-aggregate activities as long as no major function is omitted or its significance minimized. In practice, a program seems to be a major function or operation of an agency or a major mission-directed goal that cuts across agency units.

2.5 A Focus on Outputs, Outcomes, and Impacts

Under GPRA, the annual performance reports are to provide information about program outputs and outcomes. **Outputs** are the immediately observable products of a program, such as new graduates. **Outcomes** are the longer-term results for which a program is designed, for example, enabling the maintenance of a well-trained work force.

OMB guidance also calls for consideration of program impacts. **Impacts** are the net total long-run effects of the program; i.e., what actually happened, as compared to what would have happened without the program.

Outputs, outcomes, and impacts should be distinguished from **inputs**, such as a teacher's time, and from production **activities**, such as teaching.

Services from a resource base, such as the **use** of a class room, are defined as inputs to a program. **Increments** to a resource base, such as a **newly built** class room, are defined as outputs or outcomes. **Decrements** to a resource base, such as wear and tear on laboratory equipment, are negative outputs or outcomes.

It seems, in the abstract, a simple matter to distinguish among these several concepts. In practice, inputs, production activities, outputs, outcomes, and impacts represent a continuum where the different pieces can blend one into another. Which are which depends in part on the objectives of the program being assessed. A college graduate might be viewed as an output of her college, but an input into her graduate school.

2.6 The Assessment Challenge

The basic template implicit in GPRA was developed some years ago in the private manufacturing

sector. The template was subsequently extended to government activities with reasonably tractable tangible dimensions, such as garbage collection in a moderately sized city. Extending the template further to encompass complex and/or intangible aspects of public activities will require significant methodological advances.

This is a primary challenge of GPRA--to develop cost effective methods for assessment of outputs, outcomes, and impacts of the many programs in the Federal sector. Imagination and persistence will be needed to develop methods appropriate to programs with significant intangible dimensions, such as the creation of new knowledge in research and statistical activities, the provision of justice, and the conduct of foreign policy.

Fortunately, the framers of GPRA recognized the several challenges posed and built in the flexibility that agencies will need to develop approaches appropriate to their programs. GPRA provides a multi-year phase-in period during which agencies can design and test new methods.

2.7 Remainder of This Paper

The remainder of this paper reports how the National Science and Technology Council (NSTC) and the Office of Science and Technology Policy (OSTP) are approaching assessment of fundamental science programs, how the National Science Foundation is responding to GPRA, and how a statistical program within the Foundation is addressing the GPRA mandate.

3. NSTC/OSTP ASSESSMENT PROCESS

In 1994, the Subcommittee on Research, of the Committee on Fundamental Science, of the National Science and Technology Council (NSTC), and the Office of Science and Technology Policy (OSTP), in the Executive Office of the President, began a process to examine and discuss responsible strategies for assessment of fundamental science. Although we do not yet know the final outcome of the NSTC/OSTP Assessment Process, we can report some of the key themes that have entered the discussions.

Participants in the process have eschewed a cop-out strategy that says "We're special; we don't do assessment." And they have rejected a rigid cookie-cutter approach that would be confined to quantitative output and outcome indicators, computational algorithms, and mechanical evaluations. Their goal is to develop a set of principles for assessing fundamental science that will yield balanced assessments and provide sufficient flexibility to accommodate the diverse activities that comprise the Federal fundamental science portfolio.

Whatever the differences among fundamental science programs, they have in common their immediate product which is new knowledge. They also have in common the dynamic, cumulative processes which create new knowledge. There are multiple inter-linkages among research activities and between the creation of new knowledge and its eventual applications in our lives. At the time a new insight is discovered, the potential applications may not be apparent. They may subsequently appear only after a long lag. Moreover, any eventual applications are mediated by many other activities, institutions, and policies--for example, technological development efforts, regulatory environment, financial mechanisms, diffusion of knowledge and practice, educational institutions, and social attitudes.

The first step in responsible program assessment, for science or any other program, is a clear statement of program goals. Goals for fundamental science are derived from the Federal government's ultimate purpose which is to contribute to the over-arching national goals of improved health and environment, prosperity, national security, and quality of life. Fundamental science is a necessary contributor to these over-arching national goals.

To promote scientific contributions to over-arching national goals, the Administration's science policy statement, *Science in the National Interest* (1994), has established a critical enabling goal for fundamental science. This enabling or intermediate goal is to maintain leadership across the frontiers of scientific knowledge.

That is, from an **overall national or NSTC perspective**, the goal is to **maintain** leadership of the United States. For an **individual agency**, the goal is to conduct its programs at world-class standards of quality and to **contribute** to leadership of the United States.

Also in support of the over-arching national goals are four additional intermediate or enabling goals defined by the Administration. These are to (1) enhance connections between fundamental research and national goals, (2) stimulate partnerships that promote investments in fundamental science and engineering and effective use of physical, human, and financial resources, (3) produce the finest scientists and engineers for the twenty-first century, and
(4) raise the scientific and technological literacy of all Americans.

All Federal agencies which support fundamental science **contribute** to one or more of these intermediate or enabling goals. The health of the science enterprise is in turn enabled by a strong infrastructure--human resources and facilities.

The way in which an agency contributes to enabling or over-arching national goals will depend on the specifics of its strategic plan, as developed in consultation with Congress, stakeholders, and OMB. The specific goals defined in the agency's strategic plan will yield further criteria for performance assessment, in addition to the world-class quality standard.

The excellence of Federal fundamental science programs has been built historically on prospective merit review with peer evaluation. New initiatives or programs in fundamental science should continue to be evaluated by merit or peer review within the framework of leadership at the scientific frontier; i.e., agency program managers should be guided by the quality of the research proposed relative to world standards, as determined by expert reviewers.

Agency performance reports should incorporate retrospective merit review with peer evaluation. They should draw on multiple sources and types of evidence; for example, a mix of quantitative and qualitative indicators and narrative text. They should provide information about context and might include descriptions of outstanding accomplishments as well as more typical levels of achievement.

For NSTC assessment of the leadership status of United States science overall, international bench-marking will need to be developed. Evaluation of leadership does not entail simplistic numerical rankings of national programs. Leadership rests in having our research and education programs perform at the cutting edge--sometimes in competition, but often in cooperation, with scientists of other nations.

An agency's assessment strategy should develop criteria intended to sustain and advance the excellence and responsiveness of the research system. It should establish performance indicators that are useful to managers and encourage risk taking, but it should avoid assessments that would be inordinately burdensome or costly or that would create incentives that are counter productive.

As anticipated by the framers of GPRA, agencies will need to experiment in order to develop an effective set of assessment tools.

Finally, agencies should produce assessment reports that will inform future policy development and subsequent refinement of program plans. They should communicate the results of their program results to the public and their elected representatives.

We would be happy to send you the final report of the NSTC/OSTP Assessment Process if you send us your name and address. The next two parts of the paper examine the plans of the National Science Foundation for assessment of its fundamental science programs and the plans of the Division of Science Resources Studies, a statistical unit within the Foundation.

4. NATIONAL SCIENCE FOUNDATION (NSF) EXPERIENCE

Dr. Susan Cozzens, head of the Foundation's Office of Policy Support, is leading NSF staff efforts to develop a response to GPRA. This section of the paper is based primarily on material prepared by Dr. Cozzens.

4.1 The Essence of GPRA

If one poses the question as to how GPRA is different from past attempts at improved management and accountability, a statement to Congress by Johnny Finch, Assistant Comptroller General of GAO (U.S. General Accounting Office, June 27, 1995) provides perspective:

> "The Government Performance and Results Act (GPRA) seeks to *fundamentally change* the focus of federal *management* and *accountability* from a *preoccupation with inputs and processes* to a greater *focus on the outcomes* that are being achieved. A focus on outcomes--in essence, a return-on-investment in federal programs--is especially important in the current environment in which the federal government faces severe and continuing budget pressure."

Finch sees five major challenges to the effective implementation of GPRA. These are: developing and sustaining top management commitment to GPRA; building the capacity of agencies to implement GPRA and use the resulting performance information; creating incentives to implement GPRA and to change the focus of management and accountability; integrating GPRA into daily operations; and building a more effective Congressional oversight process.

This fundamental change in focus and the challenges to implementation indicated by Finch highlight the complexity of achieving an appropriate response. The NSF experience, involving lots of activities, people, time, and effort demonstrates clearly how complex this process is.

4.2 Initial NSF Efforts

Before beginning to develop a coherent, integrated response to GPRA and its requirements, NSF had

to formulate and answer a number of key questions including: Who are the customers of NSF? What are NSF long range goals and objectives? How do long term goals translate into tangible performance objectives? How can attainment of such goals be measured? Who is going to be involved in designing the response to GPRA?

In thinking about both GPRA and customer service, NSF had to identify its major customers and stakeholders. In one sense NSF grantees--both researchers and those involved in science, engineering, and mathematics education--are its principal customers. In another sense the general public--U.S. taxpayers--are its ultimate customers. This raises an intriguing question. Is servicing NSF grantees effectively equivalent to servicing the NSF public effectively? The answer appears to be somewhat ambiguous. Using the peer review system combined with high quality management and administration procedures to distribute the NSF program budget guarantees high quality research and science and engineering education activities being funded. Yet, the outcome of these activities, particularly research, on the general populous are more intangible. Research results often have impacts which occur far out in the future. Immediate results, much less longer term results, are unknown or uncertain at the outset. Research findings are often serendipitous, and applications resulting from them often unanticipated. In addition, since the impact on individual science and engineering disciplines funded by NSF is also affected by other Federal agencies and non Federal sponsors, outcomes attributed to NSF may be impossible to isolate.

In early 1995, NSF released its strategic plan *NSF in A Changing World*. The plan articulates three goals and four core strategies for achieving these goals. The availability of this strategic plan has been invaluable in framing the NSF GPRA response. The three goals are: world leadership in all aspects of science, mathematics, and engineering; new knowledge in service to society; and excellence in science, mathematics, engineering, and technology education. The four core strategies are: develop intellectual capital; build the physical infrastructure; integrate research and education; and promote partnerships.

4.3 Formation of NSF Performance Goals

NSF has found the formulation of performance goals that meet the GPRA requirements to be the most challenging aspect of results-oriented management within the framework of the act. There was considerable early skepticism among the research community and many in NSF and other agencies about GPRA's applicability to research, particularly basic research. This skepticism indicated that an education effort would be necessary for NSF management, NSF staff, and NSF funded performers. That education process has been going on through widespread discussion and a series of valuable learning experiences. The core GPRA concepts of outputs and outcomes in relation to the research process have been discussed at great length within NSF and outside the agency.

NSF management and staff have been participating in a number of GPRA pilot projects and in a series of indicator development teams. In early 1994, NSF volunteered to undertake a number of GPRA pilot projects. The four resulting GPRA pilot projects on Science and Technology Centers, Mathematics and Physical Science Facilities, High Performance Computing and Communications, and Project Fast Lane (dealing with electronic proposal submission) established a number of approaches to setting performance goals that have been useful in guiding the overall NSF process.

A number of teams were established focusing on how NSF can determine how well it meets those

goals that cut across divisions at the Foundation. Indicator development teams were formed, incorporating both staff and management, to work on developing general plans for performance indicators in four key areas: centers, education, facilities, and research projects. The Office of Budget, Finance, and Award management also drafted performance indicators for administration and management functions.

NSF management has been careful in keeping the external community abreast of its internal deliberations and has tried to use the expertise of that community wherever possible. All the NSF external advisory committees have been kept informed of the results of the ongoing, iterative process occurring at NSF either by oral or written presentations. External discussions have also been held at the National Academy of Sciences, at the NSTC Committee on Fundamental Science, and at a number of other forums.

At this time, NSF has decided to develop performance goals for four main program functions--research projects and centers; facilities; education; and administration and management. For three of the areas (facilities, education, administration), it is felt that quantitative performance goals appear to be workable. For the research function, setting quantitative goals on output measures does not appear to be viable and NSF is proposing using the alternative format for GPRA in conjunction with independent assessment panels.

Development of these draft proposals was neither a trivial exercise nor is it complete. The exercise involved a lot of time, effort, and people both inside and outside of NSF. It also involved considerable discussion among NSF staff and management and with the external community. NSF hopes that it will continue to learn and improve its response and that the flexibility of GPRA will ultimately lead the Foundation to a viable response mechanism that will improve the effectiveness and flexibility of the agency.

5. SCIENCE RESOURCES STUDIES (SRS) EXPERIENCE

5.1 SRS Role within NSF

The primary role of the Division of Science Resources Studies (SRS) within NSF is to provide reliable data and analyses about the science and engineering enterprise in the United States and abroad. It is clear that the current NSF GPRA proposal does not include this activity directly. Furthermore, since SRS is not a line item in the NSF budget it may not be required legislatively to respond directly to GPRA. One might then ask why SRS should try to develop its own response to GPRA requirements. There are a number of good reasons. Although SRS's activities are not covered directly in NSF's initial proposal for responding to GPRA, it is expected that later responses will include these activities. If SRS does not take any action on GPRA, the Division runs the risk of being judged on criteria that might not be relevant to its primary mission. By formulating its own goals and objectives, SRS can set up measures and indicators of how well it is doing in meeting these objectives, thus providing both itself and NSF management with information that can be used to improve SRS effectiveness. GPRA also provides an opportunity for SRS to formulate its own goals and objectives in a form that can be used to assist NSF management to explain the functions and importance of SRS to both NSF and the nation. SRS has therefore embarked on a Division-wide effort at developing long range goals, performance goals and performance measures.

Although a lot of SRS activities relate to the three long run NSF goals and its four core strategies,

some of these activities may not be well integrated into the overall NSF strategic plan. To put SRS into perspective within both the overall agency and its home Directorate--the Directorate for Social, Behavioral, and Economic Sciences (SBE)-- the SRS program budget is about $12 million compared to an SBE budget of about $120 million and an overall NSF budget of about $3 billion.

SRS exists to meet that part of the National Science Foundation (NSF) legislative mandate to:

> *"provide a central clearinghouse for the collection, interpretation, and analysis of data on the availability of, and the current and projected need for, scientific and technical resources in the United States, and to provide a source of information for policy formulation by other agencies of the Federal Government."*

In meeting this mandate, SRS functions much like a statistical agency. SRS views its role as providing reliable data and analysis to a wide community to improve public understanding of science, engineering, and technology and for tracking the human and institutional resources vital to building the nation's science, engineering, and technology (SE&T) infrastructure. This community is wide and varied, including officials of Federal, state, and local governments; leaders of business, educational, non-profit, and international organizations; the media; and researchers and analysts of business, government, and universities.

5.2 Earlier and Parallel Efforts at Evaluation and Improvement

Thinking about its goals and how to assess its activities is not an entirely new endeavor for SRS. The Division has a long history of self evaluation. SRS is continually working at improving its surveys, adding new surveys, identifying the needs of its customers, and trying to improve its priority setting processes. To ensure that SRS products and services meet the needs of government policy makers and other customers in both the public and private sectors as optimally as possible, SRS staff routinely obtain input from customers requesting information and from participation in conferences and meetings. In addition, SRS periodically conducts more formal assessments of its customers' needs by consulting advisory groups, sponsoring conferences, and conducting customer surveys.

During the spring of 1994, members of the SRS Customer Service Task Force conducted a series of interviews with approximately 50 key SRS customers asking them how they believed SRS products and services could be improved in terms of content, quality, and service delivery. SRS is about to conduct a sample survey of a larger group of individuals with strong involvement in science and technology public policy to determine the kind and quality of science and engineering policy information desired by these users and their level of satisfaction with existing information.

SRS is also taking steps to measure and improve the timeliness of data release (length of time between the end of the data reference period and the date that data are officially released). The Division is also developing an annual calendar of publication dates for the results of regular NSF surveys. SRS has also made a commitment to making all of its reports and other data available electronically. Once data are officially released, they will be made available electronically before the published reports are released. SRS is also currently assessing the extent of its privatization of its activities compared to other statistical agencies.

5.3 Initial SRS Effort in Response to GPRA

SRS began thinking directly about responding to GPRA only fairly recently. The initial catalyst was external--a fall meeting of the SBE Directorate's advisory group in which SRS was asked to work with a subgroup of the Advisory Committee on developing performance measures for the division. In order to ensure a fruitful dialogue with this subgroup, SRS established a small internal group combining management and staff. This group familiarized itself with the GPRA legislation and thought about the nature of the processes we would have to undertake to respond to the requirements of the legislation. It viewed the SRS response to the GPRA process as an ongoing iterative process with the following steps: (1) the formation of broad SRS goals and more specific performance goals; (2) the development of measures and indicators of how well we are meeting our goals and objectives; (3) the development of monitoring procedures to determine how well we are currently doing according to the performance measures developed; (4) establishment of bench marks and milestones to use in conjunction with our performance measures; and (5) incorporation of these milestones into our overall priority setting process.

Since SBE had developed a draft strategic plan during the summer and time was scarce, the group thought it would be useful to link our initial efforts directly to the goals and objectives outlined in that plan rather than develop our own strategic plan. The Directorate draft strategic plan articulated a number of broad goals, including the following three for which SRS has significant responsibilities.

- **Produce and disseminate high-quality data and analyses related to science, engineering, and technology.**

- **Develop data bases that permit comparison of science and engineering resources and activity internationally.**

- **Extend effectiveness by working cooperatively with other parts of the Foundation; seeking partners in other agencies, the private sector, and internationally; and reaching out in service to society.**

Most of our effort to prepare for the advisory committee meeting concentrated on step (2)--development of performance measures. We also felt that we should outline a set of general issues about the entire process for discussion. For each of the above goals, we then selected relevant objectives from the Strategic Plan and tied these (where possible) into what we believe are the key attributes of statistical organizations--*relevance, accessibility, timeliness, and accuracy* of **data** and **analyses** and *effectiveness/efficiency* of its **production** and **dissemination** processes.

We also obtained information about what a number of other Federal statistical organization were doing to respond to GPRA. Using the results of our discussions and the information we had collected, we then proceeded to do some "brainstorming" to develop a list of performance indicators that might assist us in determining whether we are meeting our objectives. That brainstorming resulted in a rather long "laundry list" of possible performance indicators.

We realized that these steps were only the beginning of what we expected to be a long and time-consuming process. We did not at this time attempt to select the "best" indicators; nor did we consider how we would go about organizing and packaging an overall performance plan to incorporate multiple indicators and other useful information relevant to evaluating our success in achieving desired objectives.

We then shared the list with the SRS management group. Initial reaction to our "laundry" list was varied. The general impressions were: the list of performance measures was too long (about six pages); too many of the indicators were too specific (number of reports produced; many were not output or outcome measures (% of survey responses submitted electronically); a lot of key SRS activities, particularly intangible ones, were not being captured (value added by staff to data through analysis, special analyses used in policy debates); and that too much emphasis was being placed on things that were countable and easily measurable. There were also concerns about the interpretation of a number of the performance indicators. For example, is a large volume of requests for information a positive measure or a sign of not having a well developed mailing list? A measure of the number of off-site licenses to SRS data bases provides some information but is limited since it doesn't inform us how many of these licenses lead to useful results. SRS management still thought it might be useful to give such a laundry list to the subgroup members to show the nature of our brainstorming, as long as we also provided a set of general issues to frame the discussion.

The major thrust of our issues development was to obtain the subgroup's views on whether we appeared to be moving in the right direction and to elicit suggestions on how we might do things better. One of our major concerns was that in moving from broad goals to performance objectives to performance indicators it is easy to lose sight of some of the most important activities within the division. It is, for example, easy to count the number of phone requests for SRS information, but difficult to assess the "value added" by SRS staff who provide requesters with explanations of the data and other technical assistance. As already noted, this dilemma of selecting between easily measured outcomes and more broadly defined outcomes and impacts is not unique to SRS. Although NSF has opted for a more qualitative "expert panel" approach for assessing its research function, this is probably too costly an approach to use routinely for the entire SRS program. We wanted their view of how we could deal with this fundamental dilemma.

Another concern was whether the goals, objectives, and performance measures were sufficient. For example, did they give us enough information regarding the relevancy of the data we collect and whether or not we are addressing new important areas. Another issue we raised was whether we should really limit our performance measures to outputs and outcomes or should we also have measures of inputs and processes that are known to be correlated with desired outcomes and impacts. Finch notes that "[i]t is not enough to just measure outcomes. Some organizations also realize that they also need to continually assess their core processes that contribute to achieving their desired outcomes."

5.4 Meeting with the Advisory Committee Subgroup

To ensure that a wider audience was involved in the discussions with the subgroup and that all interested SRS staff members could participate, several days before the meeting we distributed the background material for the meeting to all SRS staff. The meeting with the advisory committee subgroup was quite valuable. About half of the SRS staff attended the meeting and most joined in what was a lively and fruitful discussion.

The advisory group members felt that we had made a healthy start on developing outcomes indicators but that we had a long way to go--no surprise to us. The need to collect information that will tell our "story" effectively and capture the "richness" of our activities was emphasized. It was suggested this could take the form of descriptive examples, including stories and anecdotes, in addition to or rather than the kinds of quantitative measures we provided. For example, the value

of contributions--data and expertise-- by staff members to task forces, working groups, and other groups examining science and engineering public policy issues cannot be captured solely, if at all, by quantitative measures.

It was further suggested, that as a starting point, we come up with 5 or 6 categories to describe what we mean by the "value added" to the data by SRS staff. We were told that we need to: think qualitatively as well as quantitatively; think in terms of developing some "negative" indicators (indicators of bad things that were prevented because of things we did); consider changes in user needs and measures that get at our flexibility in meeting user needs; document the types of information needs that SRS is currently unable to fulfill; and continually reassess goals, thinking of outcome measures as measurements against moving targets.

One of the more important issues stressed during the meeting was the importance of continued customer feedback. It was suggested that we think broadly about what the SRS mission is and what the needs of our users are and that it would be useful to categorize user needs and monitor user environments.

5.5 Monitoring Procedures and Data Collection Efforts

Although SRS already has a number of internal data systems to monitor its activities, it is in the process of improving existing systems and developing new ones to meet GPRA requirements. Part of this activity involves determining what types of information will be useful for evaluating SRS activities.

Information on the number of data inquiries by publication and by type of requestor (Congress, media, academic, etc.) is provided by a system that has been developed over the past several years. This system also attempts to track requests for information and analysis that seek something other than a publication or part of a publication. There are plans to expand this system to keep track, on a limited basis, of how the data and information requested are being used.

SRS is also monitoring electronic data use by keeping track of visitors to SRS data on NSF's Gopher and World Wide Web servers. SRS is also considering keeping track of citations to its data in the media, congressional testimony, policy papers, research articles, and reports and periodicals that would provide indicators of the use of our data for S&T policy decisions and in research. There is also considerable interest in tracking data and information requests that can't be met by SRS at the present time. The customer service surveys mentioned earlier can be used to develop this type of information. SRS staff can also be encouraged to routinely keep track of information requests that are made which cannot be responded to adequately because of lack of available information. Finally, SRS also plans to monitor references to specific S&E policy issues that can't be examined appropriately due to lack of adequate data.

5.6 Current SRS Effort in Response to GPRA

The SRS internal group's job didn't end after the Advisory Committee meeting--it actually just began. Although we have had to veer off our course several times because of unexpected events-including two government furloughs and a couple of major snow storms--we have changed our initial thinking of how to proceed in responding to GPRA. Of course we are not starting from scratch since we've already examined several of the relevant issues and we have collected information from other

agencies trying to do similar things. Yet, we are aware that a number of other activities must occur at least in parallel if not before we try to identify and develop performance indicators.

We need a clear understanding of our raison d'etre, one that can be translated into clear long term goals and objectives. We also need to articulate our objectives and goals in a manner conducive to achieving the spirit if not the letter of GPRA. We are thus cognizant of the fact that it would be better for us to develop our own strategic plan, one that is tailored to our unique responsibilities, rather than borrow from others. Such a plan must incorporate objectives that are important to us and that are capable of being operationalized into annual performance goals or objectives that can be measured either by quantitative or qualitative means. SRS, like NSF, may also want to take advantage of GPRA's flexibility and develop some type of presentation framework that draws on multiple lines of evidence and places all the indicators we use--quantitative and qualitative--in perspective.

6. CONCLUSIONS

Both NSF as an agency and SRS as a division have learned a great deal in our attempts to respond to the requirements of GPRA. Responding to GPRA is an ongoing process that is intended to take time to implement properly, and the attempts at implementation are expected to provide needed experience and knowledge which will improve the process over time. Formulating an appropriate response requires a considerable effort by staff at all levels of an organization, intense and thoughtful discussion, and a great deal of creativity and innovation. Some of the lessons learned by studying the pilots across a number of Federal agencies appear also to apply to NSF efforts.

Following GPRA in the manner desired by its creators involves a massive change in culture of most organizations. Organizations have tended to pay a lot of attention to what they were doing and how they were doing it, but considerably less attention to why they were doing something and what the results were. That is not particularly surprising since it is much easier to monitor inputs and to follow or document an ongoing process or activity than to identify or capture its results.

GPRA should provide the stimulus to enhance planning and management and strengthen both the research and statistical efforts of the Federal government.

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